



**Natural Heritage &
Endangered Species
Program**

**Commonwealth of Massachusetts
Division of Fisheries & Wildlife
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MASSACHUSETTS SPECIES OF SPECIAL CONCERN

TIDEWATER MUCKET

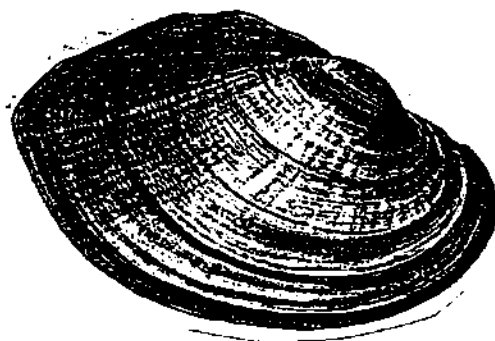
Leptodea ochracea

DESCRIPTION: The Tidewater mucket is a freshwater mussel in the family *Unionidae* and the order *Unionoida*. It is a medium size mussel whose shell ranges up to 80 mm long (1.75 in), 55 mm high (1.5 in), and 40 mm (1.6 in) wide. Its shell is ovate in both sexes. The males are relatively longer with a bluntly pointed posterior while females have a more rounded or truncated posterior. The shell is thin, fragile, and has a translucent quality. The outer covering of the shell (periostracum) is brownish or modified ranging from a pale reddish orange to a pale olive, and without rays or with narrow, greenish, rather obscure rays all over the shell. Its surface has low concentric wrinkles and prominent growth rests.

SIMILAR SPECIES IN MASSACHUSETTS: In Massachusetts, the *Leptodea ochracea* is sometimes confused with a large yellowish mucket known as *Lampsilis cariosa*. *L. ochracea* is typically smaller and more delicate with rays either absent or covering the shell. *L. cariosa* has rays only near the posterior slope. *L. cariosa* does not occur within the same habitat as *L. ochracea* and is presently found only in the Connecticut River.

RANGE: Tidewater mucket is found along the Atlantic coastal plain from Cape Breton, Nova Scotia, to the Savannah River, Georgia. In Massachusetts, this species is found only in several Great ponds (over 10 acres) in Plymouth and western Barnstable counties.

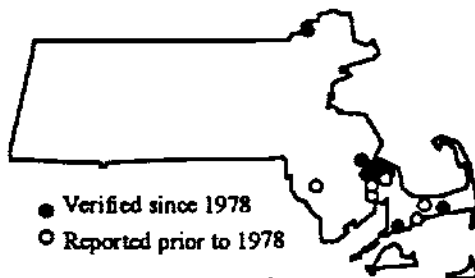
HABITAT IN MASSACHUSETTS: This species occurs principally in quiet waters (ie. ponds, canals, and slow-moving parts of rivers). In Massachusetts, the Tidewater mucket prefers natural coastal freshwater ponds of several acres with clear, clean water and a sandy substrate. In other parts of its range, this species may be found on mud or sand bottoms. It always occurs only near the seacoast.



Burch, J.B. 1973. *Freshwater Unionacean Clams (Mollusca: Pelecypoda) of North America*. US EPA.



Documented Range of
Tidewater Mucket



Distribution in Massachusetts

LIFECYCLE/BEHAVIOR: Like other mucklets, the Tidewater mucket is what is referred to as a long term breeder, meaning that eggs are deposited by the female into her marsupial demibranchs (parts of the gill) in summer where they remain and develop into larvae. The following spring the larvae are released. The larvae of all freshwater mussels living in Massachusetts are called glochidia and are obligatory parasites of fish. Specific species of mussels infest specific species or groups of species of fish for several possible reasons, including protection and dispersal, while undergoing metamorphosis from the larval stage to the juvenile mussel. Following transformation, the juvenile mussel drops off the host fish and commences a benthic existence. The fish species involved with the Tidewater mucket is (are) unknown but the habitat suggests an anadromous fish, possibly the alewife. Juveniles generally take a few years to mature. Adults can breed throughout their lifetime which may range up to five or more years.

POPULATION STATUS IN MASSACHUSETTS: Tidewater mucket is presently listed as a Species of Special Concern in Massachusetts. Eleven populations known historically from nine towns can no longer be located. Surveys in the 1990s reported to the Massachusetts Natural Heritage and Endangered Species Program have documented 13 populations in 14 towns (two populations are in ponds on town boundaries). Many of the currently known populations of the Tidewater mucket in Massachusetts have been known for many years and still exist because the ponds they live in have remained relatively free of pollution or extensive development. However, inflow of pollutants or enrichment due to release of septic materials could easily alter the chemical and physical character of the inhabited pond and threaten the continued existence of the species in the state.

MANAGEMENT RECOMMENDATIONS: One of the greatest threats to this species today is acid rain. This species of mussel is habitat sensitive and its population is threatened by the effects of acid rain not only damaging the mussel's tissues but by harming its required host fish. Research shows that there is gill damage to the host fish from acid rain. These results have a definite impact on glochidia which prefer fish gills as sites for parasitism. When this parasitic stage is lost or altered, it will result in the death of the freshwater mussel glochidia and therefore diminish the viability of population reproduction. The nature of the glacial soils in the habitat areas where the Tidewater mucket exists lack the buffering capabilities to shield it from the deadly effects of acid rain. In effect, if the host fish goes, so goes the freshwater mussel population. It should be noted that the pH in ponds in Massachusetts is decreasing and life forms are suffering for it.

CC, PCS 1998 update

Further Reading

- Clarke, A. H. 1981. The Freshwater Molluscs of Canada. National Museum of Canada.
- Fichtel, C. and D. G. Smith. 1995. The Freshwater Mussels of Vermont. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department. Tech. Rpt. 18. Montpelier, VT. 54pp.
- Gabriel, M.. 1995. Freshwater mussel distribution in the rives and streams of Cheshire, Hillsborough, Merrimack, & Rockingham Counties, New Hampshire. Report to US Fish & Wildlife Service, NEFO. Concord, NH. 62pp.
- Gabriel, M. and P. Huckery. 1998. Freshwater Mussels. Massachusetts Wildlife 48(2):15-21.
- Martin, S.M. 1997. Freshwater Mussels (Bivalva: Unionoida) of Maine. Morteastern Naturalist 4(1):1-34.